**DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

# WELDING INSPECTION REPORT

**Resident Engineer:** Pursell, Gary
**Address:** 333 Burma Road
**City:** Oakland, CA 94607

**Report No:** WIR-000348
**Date Inspected:** 06-Aug-2007

**Project Name:** SAS Superstructure
**Prime Contractor:** American Bridge/Fluor Enterprises, a JV
**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

**OSM Arrival Time:** 800
**OSM Departure Time:** 1530
**Location:** Shanghai, China

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|---|---|---|---|---|---|---|---|
| **CWI Name:** | | | | **CWI Present:** | ☑ Yes | ☐ No | |
| **Inspected CWI report:** | ☐ Yes | ☐ No | ☑ N/A | **Rod Oven in Use:** | ☐ Yes | ☐ No | ☑ N/A |
| **Electrode to specification:** | ☐ Yes | ☐ No | ☑ N/A | **Weld Procedures Followed:** | ☐ Yes | ☐ No | ☑ N/A |
| **Qualified Welders:** | ☐ Yes | ☐ No | ☑ N/A | **Verified Joint Fit-up:** | ☐ Yes | ☐ No | ☑ N/A |
| **Approved Drawings:** | ☐ Yes | ☐ No | ☑ N/A | **Approved WPS:** | ☑ Yes | ☐ No | ☐ N/A |
| | | | | **Delayed / Cancelled:** | ☐ Yes | ☐ No | ☑ N/A |

**Bridge No:** 34-0006
**Component:**

**Summary of Items Observed:**

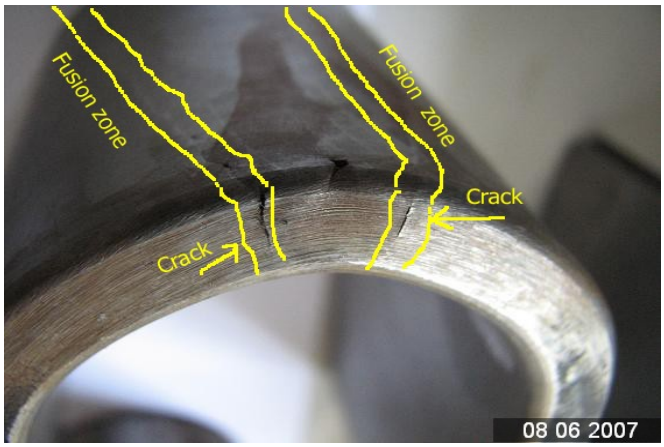
The CALTRANS Quality Assurance (QA) Inspector, Alfredo Acuna was present for the mechanical testing on the welding qualification tests for the procedure qualification records (PQR)PQR HP 2007148, HP2007249-2, HP2007144-1, HP2007153, HP2007147 and PQR HP 2007149 scheduled for this project. The testing was at the ZPMC facility in Shanghai, China for the San Francisco Oakland Bay Self Anchored Suspension Bridge. The QA Inspector observed tensile test on reduced sections and all weld metal specimens along with side bends, Charpy Vee Notch (CVN) and macroetch tests. The tests were performed per the AWS D1.5, Section 5.18 requirements. The mechanical tests appeared to comply with the contract documents with the exception of the PQR HP2007153 and HP2007149 as noted below. The QA Inspector issued a lot number of B71-050-07 through B71-055-07, for PQR HP 2007144-1, HP2007147, HP2007148, HP2007153, HP 2007249-2, and HP2007149 respectively after the completion mechanical testing.

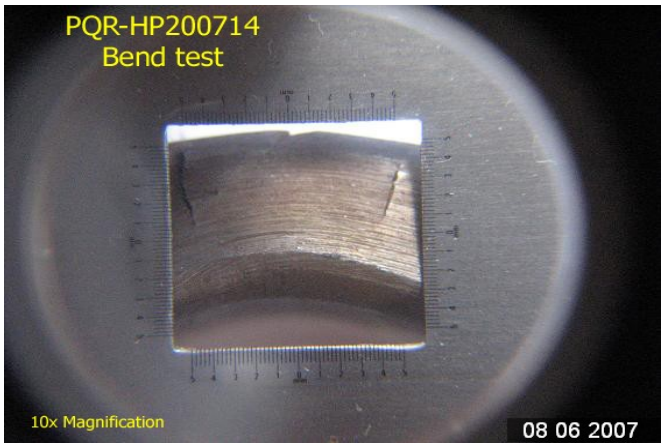
The QA inspector observed cracking on the fusion zone on four specimens for the PQR HP2007149 after bending. The QA inspector had a conversation with ABF representative Kevin Dye and ZPMC representative Huang Wei. The QA inspector brought to the attention of Mr. Huang and Mr. Dye that the four (4) bend test specimens for the PQR-HP2007149 had root cracks at the edge of the fusion zone. Mr. Wei and Mr. Dye agreed with the QA inspector and proposed that two additional bend specimens to be tested. The QA inspector had a conversation with the Caltrans Task Leader Dave McClary. The QA inspector brought to Mr. McClary attention that the bend test for the PQR HP2007149 had four specimens with similar pattern of root cracks on the fusion zone and ZPMC and ABF representatives were proposing to bend 2 additional specimens as resolution. Mr. McClary, Caltrans Structures representative Keith Devoport and Caltrans Senior Level III John Kinsey went to the ZPMC test lab area. After performing visual observations on the test coupons, Mr. McClary and Mr. Devoport brought to QA inspector attention that a macroetch test specimen showed a root crack and appeared to be the cause of the after

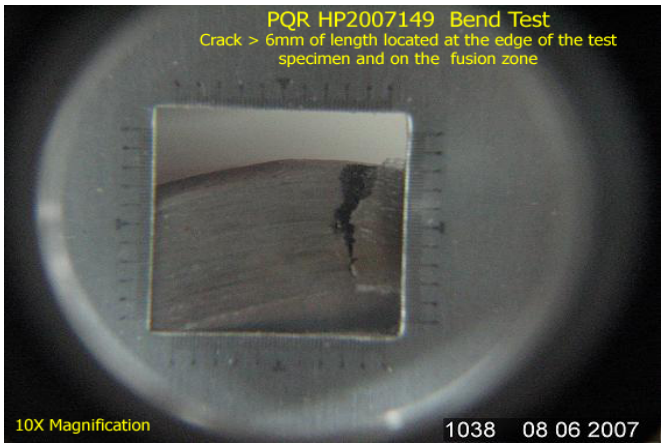
bending cracking at the fusion zone . Mr. McClary added that Caltrans representatives were going to bring to ABF representatives attention the condition of the bend and macroetch tests for the PQR HP2007149. The QA inspector observed ABF representatives Craig Knops and Steve Lawton performing visual observations to the test specimens for the PQR HP2007149. The PQR HP2007149 results were still pending at the end of the shift.

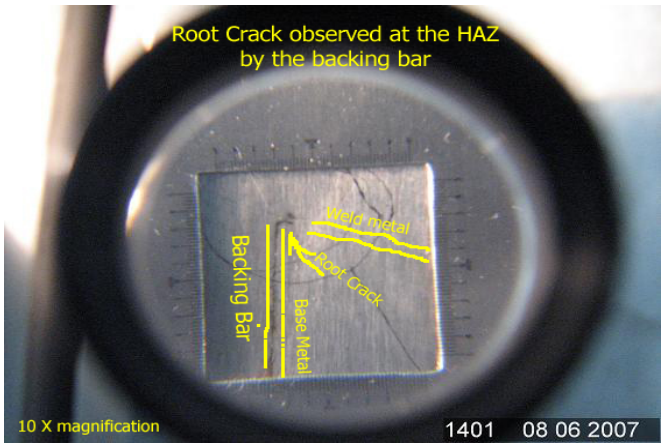
The QA inspector witnessed the CVN testing for the above mentioned PQRs. The QA inspector observed that CVN test values from the specimen designated as PQR HP 2007153 were below the minimum required by the AWS D1.5 for fracture critical material at - 30 degree Celsius. The actual values were below of 12 Joules and the minimum required CVN value was 34 Joules for the under matched joint A709 grade 345 to HPS 485 grade 485W material. Mr. Huang relayed to the QA inspector that the ZPMC rejected the PQR HP 2007153 due to the actual CVN values obtained were below of the minimum required value. See TL_6032 for details of this test.

The digital photographs below show the CVN test coupons after testing for the PQR-HP 2007153 and the Macroetch and bend test result for the PQR-HP2007149.



# WELDING INSPECTION REPORT

*( Continued Page 3 of 3 )*


**Summary of Conversations:**

As noted above.

**Comments**

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

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|---|---|---|
| **Inspected By:** | Acuna,Alfredo | Quality Assurance Inspector |
| **Reviewed By:** | McClary,David | QA Reviewer |